



CHEVRON CORPORATION
ASME - Welding Procedure Specification (WPS)
WeldOffice WPS

WPS record number	CVX-2301	Revision 0	Qualified to	ASME Section IX and B31.3
Date	10/18/2005		Company name	CHEVRON CORPORATION
Supporting PQR(s)	PQR-157			
Reference docs.				

Scope	Gas Tungsten Arc Welding of aluminum alloy (6061 and 6063) socket weld fittings and slip on flanges Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

BASE METALS (QW-403)

Type	Aluminum alloys (P23)	P-no. 23	Grp-no. -
Welded to	Aluminum alloys (P23)	P-no. 23	Grp-no. -
Backing:	Fillet Weld	P-no.	Grp-no. -
Retainers			
Notes			

THICKNESS RANGE QUALIFIED (in.)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
	no min.	no max.	-	-

FILLER METALS (QW-404)**THICKNESS RANGE QUALIFIED** (in.)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GTAW	5.10	ER5356	22	NA		no min.	no max.	-	-
Cons. insert	-	-	-	-	-	- None -			
Flux	-	-	-	-	-	- None -			

WELDING PROCEDURE

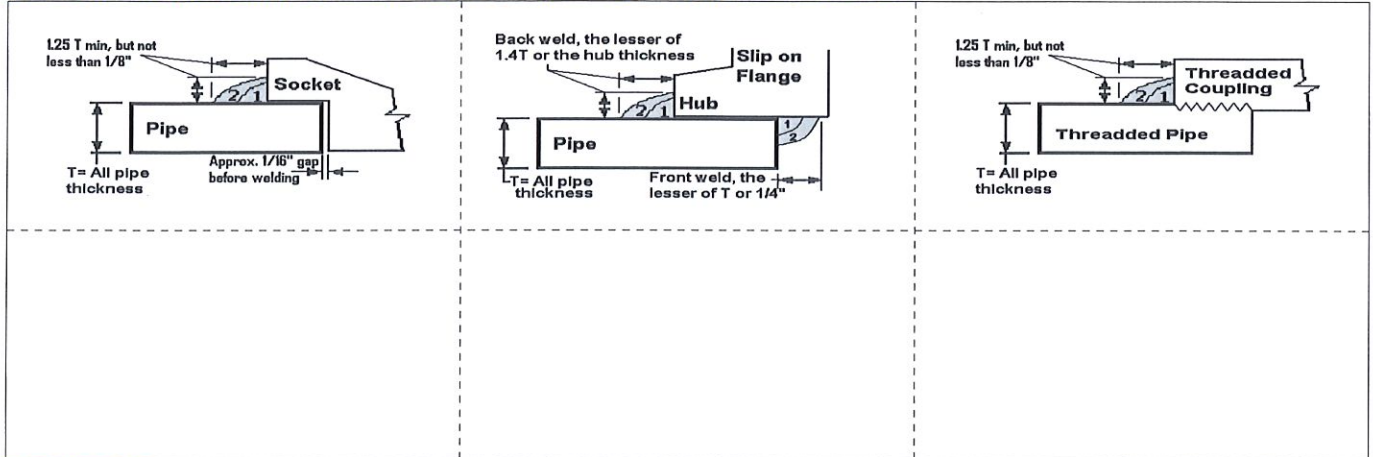
Welding process		GTAW		
Type		Manual GTAW Fillet Welds		
Preheat temperature	(°F)	50		
Maximum interpass temperature	(°F)	400		
Tungsten size	(in.)	1/8 to 1/4		
Tungsten type		SFA 5.12 EWTh-1		
Filler metal size	(in.)	1/8 or 3/16		
Layer number		All weld layers		
Position of groove		All		
Weld progression		Uphill		
Current/polarity		AC		
Amperes		160 - 325	250 - 400	
Volts		14 - 18	14 - 18	
Travel speed	(in./min)	1 - 4 for all		
Maximum heat input	(kJ/in.)			
DC pulsing current		Not used		
Shielding:		Argon		
Gas type				
Flow rate	(cfh)	20 - 40		
Trailing:		None		
Gas type				
Flow rate	(cfh)	-		
Backing:		Not required for fillet welds		
Gas type				
Flow rate	(cfh)	-		
String or weave		Stringer or Weave*		
Orifice/gas cup size		0.5-0.75" - gas lens optional		
Multi/Single pass per side		Multiple passes		
Weld deposit chemistry				
Notes		*Weave width <4 wire diameters		



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JOINTS (QW-402) Typical joint(s). See actual production drawings and engineering specifications for details.



PREHEAT TABLE

Applicable standard	
ASME B31.3	50 (°F). If the ambient temperature is less than 50 deg F, preheat the joint to "hand warm" for all pipe thickness. Heavier sections may require 200 to 400 degree F preheat.

TECHNIQUE (QW-410)

Peening	Not used
Surface preparation	Machining/grinding to bright metal followed by wiping with solvent such as acetone-Note 7
Initial/interpass cleaning	Brushing/grinding/filing/rotary burring tools to remove all slag and surface oxide-Note 7
Back gouging method	Not applicable

NOTES

1. This procedure is intended for routine shop welding of aluminum alloy (6061 & 6063) piping socket welds, slip on flanges and seal welding of threaded joints.
2. The welding technique employs GTAW for all weld passes.
3. Use stringer bead welding technique for first pass; Use stringer or weave for remaining passes. Width of weave not to exceed 4 wire diameters.
4. This procedure is suitable for all positions, but all vertical welding shall be done uphill.
5. This procedure may be applied to all piping thickness and all piping diameters.
6. A minimum of two complete weld layers is required for all weld sizes. The finished size of the fillet weld is based upon the pipe wall thickness and must comply with the joint drawings that are shown, above.
7. Weld preparation and cleaning tools are restricted to stainless steel brushes, grinding wheels etc. that have not been contaminated on other metals such as carbon steel. This is to prevent free iron contamination.

Signature 1

Name	Signature
M. Fahrion	
Date	
10/18/2005	